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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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James C. Sturm

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08/29/2003

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/673,204

Applicant(s)

STURM ET AL.

Examiner

Michael Cleveland

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-21, 23-31 and 36-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15, 17 and 18 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 12, 14, 19-21, 23-31 and 36-40 is/are rejected.
- 7) ☒ Claim(s) 11, 13 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31: The phrase "liquid droplets are applied by ink jet printing" is unclear because there is no statement describing to what the droplets are applied. The claim was treated as at least inclusive of applying the droplets of claim 30 on the organic coating.

Claim Objections

3. Claims 14 and 16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 14 fails to further limit its parent claim because it merely recites that the solvent is applied in a pattern and that the dopant is removed in a pattern. However, any application (or removal), even uniform, is necessarily a pattern. Therefore, claim 14 does not further limit parent claim 10. Likewise, claim 16 requires transfer in "selected areas". However, such language is inclusive of all areas, and therefore the claim does not further limit its parent.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Kim (U.S. Patent 6,099,746, hereafter '746).

'746 teaches providing a first electrode (12) disposed on substrate (11) (col. 4, lines 27-32);

applying an organic coating (14) having a dopant (col. 4, lines 23-30) over the first electrode;

applying a second electrode (15) over the organic coating (col. 4, lines 1-35); and
removing the dopant (and the host) from areas of coating (14) by planarization (col. 4, lines 47-50; fig. 2d).

6. Claims 19, 24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukui et al. (U.S. Patent 5,398,051, hereafter '051).

'051 teaches

providing a first layer of material (3);

applying a dopant (6) in a pattern to the first layer such that the first layer contains the dopant (15);

providing a second layer (12) comprising an organic material (see col. 12, lines 39-47);
and

transferring the dopant from the first layer to the second layer in the pattern (Fig. 1).

Claim 24: The dopants are dyes, which change the color (i.e., light-emitting properties) of the film (col. 11, lines 46-59).

Claim 27: The dye is transferred by thermal transfer (i.e., annealing) (Abstract).

Claim Rejections - 35 USC § 103

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 5-7, 28-31, and 36-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Shirasaki et al. (U.S. Patent 5,895,692, hereafter '692) in view of Yuh et al. (U.S. Patent 5,521,047, hereafter '047).

Claims 1-3, 5-7, 28-31, 34, 36-40: '692 teaches a method of making an organic light-emitting device (col. 1, lines 1-15)

providing a substrate (11);

coating an organic material (16) on the substrate (col. 4, lines 41-60; Figs. 6A-6B); and

applying fluorescent dyes (i.e., dopants) (13a-c) in selected areas to modify the color (i.e., the light-emitting properties) of the film (col. 4, line 61-col. 5, line 8; Figs. 7A-8B);

and causing the dopant to migrate into the organic coating (col. 7, lines 15-36).

'692 does not teach that a solvent from the ink jet or screen printing inks causes the dopant to diffuse into the organic material. However, '692 teaches that the inks are fluorescent inks such as perylene. '692 is silent as to the identity of the inks. Yuh '047 teaches that solvents such as acetone and tetrachloroethylene (TCE) are useful solvents for solutions (i.e. inks) containing fluorescent pigments such as perylenes (col. 2, lines 27-45). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a solvent such as acetone or TCE as the particular ink solvent of '692 with a reasonable expectation of success because '047 teaches that they are useful solvents for carrying such pigments. Thus, the prior art reasonably suggests the particular solvents, the particular receiving material (polyvinylcarbazole (PVCZ) ('692, col. 4, lines 55-60), and similar pigments to those of Applicant. Thus, it appears

that the phenomenon of solvent-caused diffusion must either be caused by the features suggested by the prior art or else by essential features which are not present in the claims.

Claim 29: The dopant is applied in a pattern and the dopant forms the same pattern after migrating into the organic layer (Figs. 7A-8B; col. 7, lines 15-36).

Claims 2-3, 30-31, 34-35: The dye may be applied by ink-jet printing (col. 7, lines 15-24).

Claim 5: The dyes may be applied by screen printing (col. 7, lines 15-24).

Claims 6-7: The inks may be red, green, or blue dyes (col. 5, lines 1-8).

Claim 36: The dyes may be applied by screen printing (col. 7, lines 15-24). Screen printing involves depositing a patterned mask on the surface to be printed (in this case, organic layer (16)), applying the printing ink (in this case, containing the dopant) over the mask and the printing surface. The dyes are then caused to migrate into the organic film in the printed pattern (i.e., in the areas exposed through the screen) (col. 7, lines 15-36; Figs. 7A-8B).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki '692 in view of Yuh '047 as applied to claim 7, above, and further in view of Tamano et al. (U.S. Patent 6,150,042, hereafter '042).

'692 is described above. It teaches that the dopant may be coumarin (col. 5, lines 1-8), but does not also teach the use of Nile red.

'042 teaches a number of materials for use as dopants in EL devices. The list (col. 77, line 19-col. 78, line 3) significantly overlaps that of '692, and includes Nile red (col. 77, line 66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Nile red in addition to coumarin as the dopants of '692 with a reasonable expectation of success because '042 teaches that Nile red is a dopant suitable for EL devices.

10. Claims 9-10, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri et al. (U.S. Patent 6,329,111, hereafter '111) in view of Kun et al. (U.S. Patent 5,004,956, hereafter '956).

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'111 teaches depositing an organic coating (7) having dopants (a phosphor and a photosensitive material) (col. 30, lines 20-42) and removing the dopant from areas of the coating (col. 35, lines 27-67) by applying a solvent.

'111 does not teach that the organic coating is disposed on a first electrode on substrate and covered by a second electrode. However, the phosphor layer of '111 is to be used in a flat panel display (col. 1, lines 1-23).

'111 teaches forming a photomask (10) above the film prior to applying the solvent (col. 32, lines 49-58). Kun '956 teaches that electroluminescent material for flat panel displays may be provided in another configuration in which the phosphor layer (14) is formed (for instance, by photolithography, see col. 5, lines 16-20) on a first electrode layer (22) on a substrate (12) and then a second electrode layer (20) is deposited on the phosphor layer (col. 5, lines 3-20).

11. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui '051 in view of Hale et al. (U.S. Patent 5,640,180, hereafter '180).

Fukui '051 is discussed above, but does not teach that the dye is applied to the first layer (i.e. intermediate transfer sheet) by ink-jet printing.

'180 teaches that thermal transfer dyes may be printed on intermediate transfer sheets by ink-jet printing. (col. 1, lines 15-21). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited the thermal transfer dye onto and into the intermediate carrier layer (3) of '051 by ink-jet printing instead of thermal transfer from a first donor sheet with a reasonable expectation of success and with the expectation of similar results because '180 teaches that ink-jet printing is a suitable method of deploying a thermal transfer dye to an intermediate transfer layer.

12. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui '051 in view of Hashimoto et al. (U.S. Patent 4,833,123, hereafter '123).

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Fukui '051 is discussed above, but does not teach that the dye is applied to the first layer (i.e. intermediate transfer sheet) by ink-jet printing.

'123 teaches that thermal transfer dyes may be printed on thermal transfer sheets by screen printing (col. 3, lines 42-46). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited the thermal transfer dye onto and into the thermal transfer layer (3) of '051 by ink-jet printing instead of thermal transfer from a first donor sheet with a reasonable expectation of success and with the expectation of similar results because '123 teaches that ink-jet printing is a suitable method of deploying a thermal transfer dye to an intermediate transfer layer.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui '051 in view of Mayer (U.S. Patent 3,986,823, hereafter '823).

Fukui '051 is discussed above, but does not teach explicitly that the dye is red, green, or blue.

'823 teaches that red or blue dyes may be thermally transferred (col. 24, lines 9-21). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a red or blue dye instead of the cyan, yellow, or magenta dyes of '051 with a reasonable expectation of success and with the expectation of similar results because '823 teaches that red and blue dyes are suitable colors for thermal transfer dyes.

14. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui '051 in view of Mayer '823 and further in view of Sato et al. (U.S. Patent 5,801,884, hereafter '884).

Fukui '051 is discussed above, but does not teach explicitly that the dyes are coumarin and Nile red. Mayer '823 teaches that coumarins and oxazines are operative thermal transfer

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dyes (col. 11, lines 58-68), but does not explicitly teach the use of nile red. However, '884 teaches that nile red is a particular oxazine dye of interest. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used coumarin and nile red instead of the cyan, yellow, or magenta dyes of '051 with a reasonable expectation of success and with the expectation of similar results because '823 and '884 teach that coumarin and nile red are suitable thermal transfer dyes.

Allowable Subject Matter

15. Claims 15, 17, and 18 are allowed. Claim 16 would be allowable if rewritten to overcome the objection set forth in this Office action.

Tang '357 is disqualified as prior art against these claims. Accordingly, the prior art does not fairly teach or suggest providing a first electrode over a substrate, providing a first layer with a dopant over the electrode, providing an organic second layer on the first layer and transferring the dopant from the first layer to the second layer; and depositing a second electrode over the second layer. During the interview, the examiner proposed that these limitations would be met by the process outlined by applicant at p. 16, lines 4-6 of the response (summarizing the interview), but upon further consideration of Shirasaki, the examiner agrees with Applicant's conclusion that Shirasaki does not fairly teach or suggest that process proposed by the examiner.

16. Claims 11 and 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The prior art of record does not fairly teach or suggest annealing to cause a dopant to migrate from a coating in the context of providing a first electrode on a substrate, applying an organic coating with a dopant on the first electrode, removing the dopant by annealing and depositing a second electrode over the coating.

Response to Arguments

17. Applicant's arguments filed 6/5/03 have been fully considered but they are not persuasive.

Regarding claim 31, Applicant argues that the claim is clear because it is amended to depend from claim 30 and that therefore the liquid droplets of claim 31 are the same as those of claim 30; Applicant compares the relationship to that of claims 3 and 2. The argument is unconvincing because there is no indication that the liquid droplets of claim 31 are necessarily those of claim 30; claim 31 merely states "wherein liquid droplets are applied by ink jet printing". (In contrast, claim 3 requires "wherein the liquid droplets [of claim 2] are applied by ink jet printing" (Emphasis added by examiner).) The remainder of the rejections under 35 USC 112, 2nd paragraph are withdrawn in view of Applicant's amendments and remarks.

Objection: Applicant's arguments regarding "pattern" and "selected area" are not convincing because p. 2, lines 1-15 do not explicitly give a definition of "pattern" or "selected area". In the absence of such clear definition in the specification, the terms must be given their plain meanings, which are inclusive of a solid pattern and of all areas being selected.

35 USC 102 and 103: Applicant's arguments, see Paper No. 13, filed 6/5/2003, with respect to the rejection(s) of claim(s) 9, 11, 13, 15-17, 19, 24-25, and 27 under 35 USC 102 in view of Kawakami have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

Applicant's amendment has overcome the rejections over Pastor because Pastor does not teach electrodes. However, see newly applied Nojiri in view of Kun. Insofar as the arguments regarding Pastor that the references teach removing unwanted portions of the coating in their entirety apply to the current rejection, the argument is unconvincing because the claims require the removal of the dopant from areas of the coating. The claim does not exclude the removal of entire section of the coating as long as second electrodes are placed on top of what remains. That is, the claims do not require leaching a dopant from areas of the coating while leaving a host element of the coating behind in those areas.

Applicant's arguments regarding claims 1-7, 28-31 and 34-36 in view of Shirasaki that it does not teach that solvents cause diffusion of the pigment into the receiving layer are unconvincing because the particular solvents Applicant uses to achieve such results are

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reasonably suggested by the prior art of record and appear to inherently cause at least some degree of diffusion, particularly in view of Shirasaki's teachings that the substrate may be heated, which as Applicant indicates promotes diffusion. Applicant's arguments that the method allows solvent infiltration without heating are unconvincing because the claims do not exclude heating. Applicant's arguments regarding the rejections of claims 9 and 11 are convincing in view of the amendment, and therefore these rejections are withdrawn,

The rejections of claims 1-3, 6-7, 9-10, 14-16, 18, 28-31, and 33 under 35 USC 102 in view of Tank '357 are withdrawn in view of applicants priority document. Claims 19-27 are not entitled to the priority date of 60/081,492 because they are not fully supported by the document, which does teach applying a dopant to a first layer so that the first layer contains the dopant, and then transferring the dopant to an organic second layer. The rejections of claims 19-27 under 35 USC 102 and 103 over Tang (in combination with other references) are withdrawn because Tang teaches that the dopant is applied on top of a first layer and diffused to a second layer, but does not teach the dopant is contained by the first layer, as required by claim 19.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MBP

MBC

August 25, 2003


SHRIVE P. BECK
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